Microbac

Laboratory Report Number: L13110758

Mark Lyon
Environmental Waste Solutions
2440 Louisiana Blvd
Albuquerque, NM 87110

Please find enclosed the analytical results for the samples you submitted to Microbac Laboratories. Review and compilation of your report was completed by Microbac's Ohio Valley Division (OVD). If you have any questions, comments, or require further assistance regarding this report, please contact your service representative listed below.

Laboratory Contact:
Stephanie Mossburg – Team Chemist/Data Specialist
(740) 373-4071
Stephanie.Mossburg@microbac.com

I certify that all test results meet all of the requirements of the DoD QSM and other applicable contract terms and conditions. Any exceptions are attached to this cover page or addressed in the method narratives presented in the report. All results for soil samples are reported on a 'dry-weight' basis unless specified otherwise. Analytical results for water and wastes are reported on a 'as received' basis unless specified otherwise. A statement of uncertainty for each analysis is available upon request. This laboratory report shall not be reproduced, except in full, without the written approval of Microbac Laboratories, DoD ELAP certification number 2936.01. The reported results are related only to the samples analyzed as received.

This report was certified on November 26 2013

David L. Vandenberg

David Vandenberg – Managing Director

State of Origin: NM
Accrediting Authority: N/A ID:N/A
QAPP: DOD Ver 4.1 without flagging

Microbac

Lab Report #: L13110758
Lab Project #: 3005.011
Project Name: White Sands MR
Lab Contact: Stephanie Mossburg

Record of Sample Receipt and Inspection

Comments/Discrepancies

This is the record of the shipment conditions and the inspection records for the samples received and reported as a sample delivery group (SDG). All of the samples were inspected and observed to conform to our receipt policies, except as noted below.

There were no discrepancies.

Discrepancy	Resolution

Coolers

Cooler #	Temperature Gun	Temperature	COC #	Airbill #	Temp Required?
0018484	H	0.0		1002239521810004575000804334337764	X

Inspection Checklist

#	Question	Result
1	Were shipping coolers sealed?	Yes
2	Were custody seals intact?	Yes
3	Were cooler temperatures in range of 0-6?	Yes
4	Was ice present?	Yes
5	Were COC's received/information complete/signed and dated?	Yes
6	Were sample containers intact and match COC?	Yes
7	Were sample labels intact and match COC?	Yes
8	Were the correct containers and volumes received?	Yes
9	Were samples received within EPA hold times?	Yes
10	Were correct preservatives used? (water only)	Yes
11	Were pH ranges acceptable? (voa's excluded)	Yes
12	Were VOA samples free of headspace (less than 6mm)?	NA

Microbac

Lab Report #: L13110758
Lab Project #: 3005.011
Project Name: White Sands MR
Lab Contact: Stephanie Mossburg

Samples Received

Client ID	Laboratory ID	Date Collected	Date Received
MPL 22-1113-1	L13110758-01	11/12/2013 10:00	11/13/2013 11:16
MPL 23-1113-1	L13110758-02	11/12/2013 12:46	11/13/2013 11:16

Login Number: L13110758
Department: Conventionals
Analyst: Tammy Morris

METHOD

Analysis SW846 9040C,9045D/EPA 150.1/SM4500-H B (pH)

HOLDING TIMES

Sample Analysis: All holding times were met.

PREPARATION

Sample preparation proceeded normally.

BATCH QA/QC

Method Blank: All acceptance criteria were met.

Laboratory Control Sample: All acceptance criteria were met.

Matrix Spikes: All acceptance criteria were met.

Duplicates: All acceptance criteria were met.

SAMPLES

Samples: All acceptance criteria were met.

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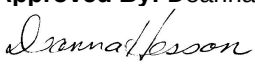
Narrative ID: 75099
Approved By: Deanna Hesson



Login Number: L13110758
Department: Metals
Analyst: Qin Xu

METHOD

Preparation: SW-846 3015

Analysis: SW-846 6010

HOLDING TIMES

Sample Preparation: All holding times were met.

Sample Analysis: All holding times were met.

PREPARATION

Sample preparation proceeded normally.

CALIBRATION

Initial Calibration: All acceptance criteria were met.

Alternate Source Standards: All acceptance criteria were met.

Interference Check Standards: All acceptance criteria were met.

Continuing Calibration Verification: All acceptance criteria were met.

Continuing Calibration Blank: All acceptance criteria were met.

BATCH QA/QC

Method Blank: All acceptance criteria were met.

Laboratory Control Sample: All acceptance criteria were met.

Serial Dilution/Post Digestion Spikes: WG453597 - All acceptance criteria were met.

Matrix Spikes: All acceptance criteria were met.

SAMPLES

Samples: All acceptance criteria were met.

Narrative ID: 74642
Approved By: Maren Beery

Login Number: L13110758
Department: Metals
Analyst: Ji Hu

METHOD

Preparation: SW-846 3015

Analysis: SW-846 6020

HOLDING TIMES

Sample Preparation: All holding times were met.

Sample Analysis: All holding times were met.

PREPARATION

Sample preparation proceeded normally.

CALIBRATION

Initial Calibration: All acceptance criteria were met.

Alternate Source Standards: All acceptance criteria were met.

Interference Check Standards: All acceptance criteria were met.

Continuing Calibration: All acceptance criteria were met.

Continuing Calibration Blank: WG453372 - Due to continuing calibration blank failure for selenium on 19-Nov-2013 at 13:09, all batch QA/QC and client samples 01 and 02 were reanalyzed on a later calibration which was compliant for selenium.

Low Level Check: All acceptance criteria were met.

BATCH QA/QC

Method Blank: All acceptance criteria were met.

Laboratory Control Sample: All acceptance criteria were met.

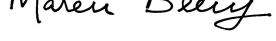
Serial Dilution/Post Digestion Spikes: WG453372 - All acceptance criteria were met.

Matrix Spikes: All acceptance criteria were met.

SAMPLES

Samples: All acceptance criteria were met.

Narrative ID: 74814
Approved By: Maren Beery



Login Number: L13110758
Department: Metals - AA
Analyst: Pierce Morris

METHOD

Preparation: SW-846 7470

Analysis: SW-846 7470

HOLDING TIMES

Sample Preparation: All holding times were met.

Sample Analysis: All holding times were met.

PREPARATION

Sample preparation proceeded normally.

CALIBRATION

Initial Calibration: All acceptance criteria were met.

Alternate Source Standards: All acceptance criteria were met.

Interference Check Standards: All acceptance criteria were met.

Continuing Calibration Verification: All acceptance criteria were met.

Continuing Calibration Blank: All acceptance criteria were met.

BATCH QA/QC

Method Blank: All acceptance criteria were met.

Laboratory Control Sample: All acceptance criteria were met.

Serial Dilution/Post Digestion Spikes: WG452995 - All acceptance criteria were met.

Matrix Spikes: All acceptance criteria were met.

SAMPLES

Samples: All acceptance criteria were met.

Narrative ID: 74643
Approved By: Maren Beery

Login Number: L13110758
Department: General Chromatography
Analyst: Jeremy Kinney

METHOD

Analysis EPA300.0/SW846 9056

HOLDING TIMES

Sample Analysis: Hold times for NO2 and NO3 are 48 hours and the hold times for F, Cl, Br, and SO4 are 28 days. The hold time forms calculate the hold time based on 48 hours. All samples were analyzed in hold.

CALIBRATION

Initial Calibration: All acceptance criteria were met.

Alternate Source Standards: All acceptance criteria were met.

Continuing Calibration: All acceptance criteria were met.

BATCH QA/QC

Method Blank: All acceptance criteria were met.

Laboratory Control Sample: All acceptance criteria were met.

Matrix Spikes: The client did not specify an MS/MSD for this sample delivery group.

SAMPLES

Samples: All acceptance criteria were met.

MANUAL INTEGRATION: No manual integration required.

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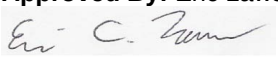
Narrative ID: 74875
Approved By: Eric Lawson



Login Number: L13110758
Department: Conventionals
Analyst: Brice Fenton

METHOD

Analysis EPA 310.2 (Alkalinity)

HOLDING TIMES

Sample Analysis: All holding times were met.

PREPARATION

Sample preparation proceeded normally.

BATCH QA/QC

Method Blank: All acceptance criteria were met.

Laboratory Control Sample: All acceptance criteria were met.

Matrix Spikes: All acceptance criteria were met.

Duplicates: All acceptance criteria were met.

SAMPLES

Samples: All acceptance criteria were met.

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Narrative ID: 75097
Approved By: Deanna Hesson

Login Number: L13110758
Department: Conventionals
Analyst:

METHOD

Analysis SW846 9014/9010C/SM4500-CN-C,E-20th (Cyanide)

HOLDING TIMES

Sample Analysis: All holding times were met.

PREPARATION

Sample preparation proceeded normally.

BATCH QA/QC

Method Blank: All acceptance criteria were met.

Laboratory Control Sample: Cyanide-Ammenable is the difference between the total cyanide and the treated cyanide. The LCS is analyzed to show that all of the cyanide is ammenable (the treated portion is ND). The LCS forms cannot calculate cyanide ammenable. The LCS is acceptable.

Sample #	Analyte	Date	Result	Lower	Upper	Type
WG453588-02	Cyanide	2013-11-21 13:30:04	2.00	90	110	Recovery

Matrix Spikes: All acceptance criteria were met.

Duplicates: All acceptance criteria were met.

SAMPLES

Samples: All acceptance criteria were met.

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Narrative ID: 75103

Approved By: Deanna Hesson

Deanna Hesson

Login Number: L13110758
Department: Conventionals
Analyst: Deanna Hesson

METHOD

Analysis EPA 120.1/SM2510 B (Conductivity)

HOLDING TIMES

Sample Analysis: All holding times were met.

PREPARATION

Sample preparation proceeded normally.

BATCH QA/QC

Method Blank: All acceptance criteria were met.

Laboratory Control Sample: All acceptance criteria were met.

Duplicates: All acceptance criteria were met.

Matrix Spikes: All acceptance criteria were met.

SAMPLES

Samples: All acceptance criteria were met.

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Narrative ID: 75098
Approved By: Deanna Hesson

Login Number: L13110758
Department: Conventionals
Analyst: Brice Fenton

METHOD

Analysis EPA 350.1/SM4500-NH3 B(NH3)

HOLDING TIMES

Sample Analysis: All holding times were met.

PREPARATION

Sample preparation proceeded normally.

BATCH QA/QC

Method Blank: All acceptance criteria were met.

Laboratory Control Sample: All acceptance criteria were met.

Duplicates: All acceptance criteria were met.

Matrix Spikes: All acceptance criteria were met.

SAMPLES

Samples: All acceptance criteria were met.

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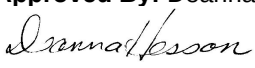
Narrative ID: 75100
Approved By: Deanna Hesson



Login Number: L13110758
Department: Conventionals
Analyst: Brice Fenton

METHOD

Analysis EPA 353.2/SM4500-NO3 F (Nitrate)

HOLDING TIMES

Sample Analysis: The instrument used for the analysis of nitrate only analyzes for nitrate-nitrite (NO3NO2) which is the amount of total nitrate (NO3) and nitrite (NO2) combined. The NO3 concentration is determined by analyzing for NO3NO2 and NO2 and calculating NO3 by the difference. An unpreserved bottle only has a 48 hour hold time for NO3 and NO2 separately. However if the bottle is preserved with sulfuric acid, the hold time for NO3NO2 is 28 days. The NO2 was analyzed within 48 hours. The NO3NO2 was analyzed from a preserved container within 28 days..

PREPARATION

Sample preparation proceeded normally.

BATCH QA/QC

Method Blank: All acceptance criteria were met.

Laboratory Control Sample: All acceptance criteria were met.

Matrix Spikes: All acceptance criteria were met.

Duplicates: All acceptance criteria were met.

SAMPLES

Samples: All acceptance criteria were met.

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Narrative ID: 75101
Approved By: Deanna Hesson

Login Number: L13110758
Department: Conventionals
Analyst: Dorothy Payne

METHOD

Analysis EPA 365.2/SM4500-P E (Orthophosphate)

HOLDING TIMES

Sample Analysis: All holding times were met.

PREPARATION

Sample preparation proceeded normally.

BATCH QA/QC

Method Blank: All acceptance criteria were met.

Laboratory Control Sample: All acceptance criteria were met.

Matrix Spikes: All acceptance criteria were met.

Duplicates: All acceptance criteria were met.

SAMPLES

Samples: All acceptance criteria were met.

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Narrative ID: 75102
Approved By: Deanna Hesson

Login Number: L13110758
Department: Conventionals
Analyst: April Greene

METHOD

Analysis EPA 160.1/SM2540 C(Total Dissolved Solids)

HOLDING TIMES

Sample Analysis: All holding times were met.

PREPARATION

Sample preparation proceeded normally.

BATCH QA/QC

Method Blank: All acceptance criteria were met.

Laboratory Control Sample: All acceptance criteria were met.

Duplicates: All acceptance criteria were met.

Matrix Spikes: All acceptance criteria were met.

SAMPLES

Samples: All acceptance criteria were met.

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Narrative ID: 75106
Approved By: Deanna Hesson

Login Number: L13110758
Department: Conventionals
Analyst: Brice Fenton

METHOD

Analysis Water: EPA 415.1/SM5310C/SW846 9060 (Total Organic Carbon)
Soil: Lloyd-Khan Methodology

HOLDING TIMES

Sample Analysis: All holding times were met.

PREPARATION

Sample preparation proceeded normally.

BATCH QA/QC

Method Blank: All acceptance criteria were met.

Laboratory Control Sample: All acceptance criteria were met.

Duplicates: All acceptance criteria were met.

Matrix Spikes: All acceptance criteria were met.

SAMPLES

Samples: All acceptance criteria were met.

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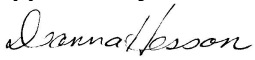
Narrative ID: 75104
Approved By: Deanna Hesson



Login Number: L13110758
Department: Conventionals
Analyst: April Greene

METHOD

Analysis EPA 160.2/SM2540 D (Total Suspended Solids)

HOLDING TIMES

Sample Analysis: All holding times were met.

PREPARATION

Sample preparation proceeded normally.

BATCH QA/QC

Method Blank: All acceptance criteria were met.

Laboratory Control Sample: All acceptance criteria were met.

Duplicates: All acceptance criteria were met.

Matrix Spikes: All acceptance criteria were met.

SAMPLES

Samples: All acceptance criteria were met.

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Narrative ID: 75105
Approved By: Deanna Hesson

Certificate of Analysis

Sample #:	L13110758-01	**PrePrep Method:**	N/A	**Instrument:**	ICP-THERMO2
Client ID:	MPL 22-1113-1	**Prep Method:**	3015	**Prep Date:**	11/19/2013 13:35
Matrix:	Water	**Analytical Method:**	6010B	**Cal Date:**	11/21/2013 11:08
Workgroup #:	WG453597	**Analyst:**	QX	**Run Date:**	11/21/2013 13:53
Collect Date:	11/12/2013 10:00	**Dilution:**	1	**File ID:**	T2.112113.135330
Sample Tag:	01	**Units:**	mg/L		

Analyte	CAS #	Result	Qual	LOQ	LOD
Beryllium, Total	7440-41-7		U	0.00200	0.00100
Calcium, Total	7440-70-2	21.5		0.500	0.250
Magnesium, Total	7439-95-4	2.48		0.500	0.250
Potassium, Total	7440-09-7	1.60		1.00	0.500
Sodium, Total	7440-23-5	18.7		0.500	0.250
Tin, Total	7440-31-5		U	0.500	0.250
Vanadium, Total	7440-62-2	0.0225		0.0100	0.00500
Zinc, Total	7440-66-6		U	0.0200	0.0100

U	Analyte was not detected. The concentration is below the reported LOD.

Certificate of Analysis

Sample #:	L13110758-01	**PrePrep Method:**	N/A	**Instrument:**	ICP-MS2
Client ID:	MPL 22-1113-1	**Prep Method:**	3015	**Prep Date:**	11/15/2013 09:51
Matrix:	Water	**Analytical Method:**	6020	**Cal Date:**	11/21/2013 10:08
Workgroup #:	WG453372	**Analyst:**	JYH	**Run Date:**	11/21/2013 13:33
Collect Date:	11/12/2013 10:00	**Dilution:**	1	**File ID:**	NI.112113.133356
Sample Tag:	02	**Units:**	mg/L		

Analyte	CAS #	Result	Qual	LOQ	LOD
Selenium, Total	7782-49-2	0.00195		0.00100	0.000500

J	Estimated value ; the analyte concentration was less than the LOQ.
U	Analyte was not detected. The concentration is below the reported LOD.

Certificate of Analysis

Sample #:	L13110758-01	**PrePrep Method:**	N/A	**Instrument:**	ICP-MS2
Client ID:	MPL 22-1113-1	**Prep Method:**	3015	**Prep Date:**	11/15/2013 09:51
Matrix:	Water	**Analytical Method:**	6020	**Cal Date:**	11/19/2013 12:44
Workgroup #:	WG453372	**Analyst:**	JYH	**Run Date:**	11/19/2013 13:54
Collect Date:	11/12/2013 10:00	**Dilution:**	1	**File ID:**	NI.111913.135407
Sample Tag:	01	**Units:**	mg/L		

Analyte	CAS #	Result	Qual	LOQ	LOD
Antimony, Total	7440-36-0		U	0.00100	0.000500
Arsenic, Total	7440-38-2	0.00795		0.00100	0.000500
Barium, Total	7440-39-3	0.0829		0.00300	0.00150
Cadmium, Total	7440-43-9		U	0.000600	0.000300
Chromium, Total	7440-47-3		U	0.00200	0.00100
Cobalt, Total	7440-48-4		U	0.00100	0.000500
Copper, Total	7440-50-8	0.00126	J	0.00200	0.00100
Lead, Total	7439-92-1		U	0.00100	0.000500
Manganese, Total	7439-96-5	0.00161	J	0.00200	0.00100
Nickel, Total	7440-02-0		U	0.00400	0.00200
Silver, Total	7440-22-4		U	0.00100	0.000500
Thallium, Total	7440-28-0		U	0.000200	0.000100

J	Estimated value ; the analyte concentration was less than the LOQ.
U	Analyte was not detected. The concentration is below the reported LOD.

Certificate of Analysis

Sample #:	L13110758-01	**PrePrep Method:**	N/A	**Instrument:**	CVAA1
Client ID:	MPL 22-1113-1	**Prep Method:**	7470A	**Prep Date:**	11/14/2013 09:24
Matrix:	Water	**Analytical Method:**	7470A	**Cal Date:**	11/15/2013 11:55
Workgroup #:	WG452995	**Analyst:**	PDM	**Run Date:**	11/15/2013 13:26
Collect Date:	11/12/2013 10:00	**Dilution:**	1	**File ID:**	M7.111513.132643
Sample Tag:	01	**Units:**	mg/L		

Analyte	CAS #	Result	Qual	LOQ	LOD
Mercury	7439-97-6		U	0.000200	0.000100

U	Analyte was not detected. The concentration is below the reported LOD.

Certificate of Analysis

Sample #:	L13110758-01	**PrePrep Method:**	N/A	**Instrument:**	IC1
Client ID:	MPL 22-1113-1	**Prep Method:**	300.0	**Prep Date:**	11/20/2013 14:27
Matrix:	Water	**Analytical Method:**	300.0	**Cal Date:**	11/06/2013 10:26
Workgroup #:	WG453639	**Analyst:**	JBK	**Run Date:**	11/20/2013 19:37
Collect Date:	11/12/2013 10:00	**Dilution:**	1	**File ID:**	I1_112013-21
Sample Tag:	01	**Units:**	mg/L		

Analyte	CAS #	Result	Qual	LOQ	LOD
Chloride	16887-00-6	13.9		0.200	0.100
Fluoride	16984-48-8	0.374		0.200	0.100
Sulfate	14808-79-8	30.9		1.00	0.500

Sample #:	L13110758-01	**PrePrep Method:**	N/A	**Instrument:**	ORION-4STAR
Client ID:	MPL 22-1113-1	**Prep Method:**	9040C	**Prep Date:**	N/A
Matrix:	Water	**Analytical Method:**	9040C	**Cal Date:**	
Workgroup #:	WG452542	**Analyst:**	EPT	**Run Date:**	11/13/2013 17:17
Collect Date:	11/12/2013 10:00	**Dilution:**	1	**File ID:**	OS13111415564801
Sample Tag:		**Units:**	UNITS		

Analyte	CAS #	Result	Qual	LOQ	LOD
Corrosivity pH	10-29-7	8.37		0.000	0.000
Temperature At Determination (C)		19.9		0.000	0.000

Sample #:	L13110758-01	**PrePrep Method:**	N/A	**Instrument:**	SMARTCHEM2
Client ID:	MPL 22-1113-1	**Prep Method:**	310.2	**Prep Date:**	N/A
Matrix:	Water	**Analytical Method:**	310.2	**Cal Date:**	11/18/2013 09:59
Workgroup #:	WG453159	**Analyst:**	BAF	**Run Date:**	11/18/2013 10:05
Collect Date:	11/12/2013 10:00	**Dilution:**	1	**File ID:**	S2131118001.018
Sample Tag:	01	**Units:**	mg/L		

Analyte	CAS #	Result	Qual	LOQ	LOD
Alkalinity, Carbonate (as CaCO3)	13-01-4		U	20.0	10.0

U	Analyte was not detected. The concentration is below the reported LOD.

Certificate of Analysis

Sample #:	L13110758-01	**PrePrep Method:**	N/A	**Instrument:**	SMARTCHEM2
Client ID:	MPL 22-1113-1	**Prep Method:**	310.2	**Prep Date:**	N/A
Matrix:	Water	**Analytical Method:**	310.2	**Cal Date:**	11/18/2013 09:59
Workgroup #:	WG453159	**Analyst:**	BAF	**Run Date:**	11/18/2013 10:05
Collect Date:	11/12/2013 10:00	**Dilution:**	1	**File ID:**	S2131118001.018
Sample Tag:	01	**Units:**	mg/L		

Analyte	CAS #	Result	Qual	LOQ	LOD
Alkalinity, Total (as CaCO3)	11-43-8	72.8		20.0	10.0

Sample #:	L13110758-01	**PrePrep Method:**	N/A	**Instrument:**	SMARTCHEM2
Client ID:	MPL 22-1113-1	**Prep Method:**	310.2	**Prep Date:**	N/A
Matrix:	Water	**Analytical Method:**	310.2	**Cal Date:**	11/18/2013 09:59
Workgroup #:	WG453159	**Analyst:**	BAF	**Run Date:**	11/18/2013 10:05
Collect Date:	11/12/2013 10:00	**Dilution:**	1	**File ID:**	S2131118001.018
Sample Tag:	01	**Units:**	mg/L		

Analyte	CAS #	Result	Qual	LOQ	LOD
Alkalinity, Bicarbonate (as CaCO3)	13-00-3	72.8		20.0	10.0

Sample #:	L13110758-01	**PrePrep Method:**	N/A	**Instrument:**	UV-120-1V
Client ID:	MPL 22-1113-1	**Prep Method:**	9014-9010C	**Prep Date:**	N/A
Matrix:	Water	**Analytical Method:**	9014-9010C	**Cal Date:**	11/21/2013 10:20
Workgroup #:	WG453554	**Analyst:**	DCM	**Run Date:**	11/21/2013 11:30
Collect Date:	11/12/2013 10:00	**Dilution:**	1	**File ID:**	1V.1311211130-06
Sample Tag:		**Units:**	mg/L		

Analyte	CAS #	Result	Qual	LOQ	LOD
Cyanide	57-12-5		U	0.0100	0.00500

U	Analyte was not detected. The concentration is below the reported LOD.

Certificate of Analysis

Sample #:	L13110758-01	**PrePrep Method:**	N/A	**Instrument:**	UV-120-1V
Client ID:	MPL 22-1113-1	**Prep Method:**	SM4500-CN-I	**Prep Date:**	N/A
Matrix:	Water	**Analytical Method:**	SM4500-CN-I	**Cal Date:**	11/21/2013 10:20
Workgroup #:	WG453794	**Analyst:**	DCM	**Run Date:**	11/21/2013 13:10
Collect Date:	11/12/2013 10:00	**Dilution:**	1	**File ID:**	1V.1311211310-06
Sample Tag:	DL01	**Units:**	mg/L		

Analyte	CAS #	Result	Qual	LOQ	LOD
Cyanide, Weak/Dissociable	57-12-5		U	0.0100	0.00500

U	Analyte was not detected. The concentration is below the reported LOD.

Certificate of Analysis

Sample #:	L13110758-01	**PrePrep Method:**	N/A	**Instrument:**	UV-120-1V
Client ID:	MPL 22-1113-1	**Prep Method:**	SM4500-CN-C,G-1999	**Prep Date:**	N/A
Matrix:	Water	**Analytical Method:**	SM4500-CN-C,G-1999	**Cal Date:**	11/21/2013 10:20
Workgroup #:	WG453588	**Analyst:**	DCM	**Run Date:**	11/21/2013 13:30
Collect Date:	11/12/2013 10:00	**Dilution:**	1	**File ID:**	1V.1311211330-05
Sample Tag:	DL02	**Units:**	mg/L		

Analyte	CAS #	Result	Qual	LOQ	LOD
Cyanide, Amenable to Chlor.	57-12-5		U	0.0100	0.00500

U	Analyte was not detected. The concentration is below the reported LOD.

Certificate of Analysis

Sample #:	L13110758-01	**PrePrep Method:**	N/A	**Instrument:**	TIAMO1
Client ID:	MPL 22-1113-1	**Prep Method:**	120.1	**Prep Date:**	N/A
Matrix:	Water	**Analytical Method:**	120.1	**Cal Date:**	
Workgroup #:	WG452659	**Analyst:**	DIH	**Run Date:**	11/13/2013 22:01
Collect Date:	11/12/2013 10:00	**Dilution:**	1	**File ID:**	TI.111313.2201CO
Sample Tag:	01	**Units:**	umhos/cm		

Analyte	CAS #	Result	Qual	LOQ	LOD
Conductivity		242		50.0	10.0

Sample #:	L13110758-01	**PrePrep Method:**	N/A	**Instrument:**	SMARTCHEM
Client ID:	MPL 22-1113-1	**Prep Method:**	350.1	**Prep Date:**	N/A
Matrix:	Water	**Analytical Method:**	350.1	**Cal Date:**	11/20/2013 09:54
Workgroup #:	WG453517	**Analyst:**	BAF	**Run Date:**	11/20/2013 09:59
Collect Date:	11/12/2013 10:00	**Dilution:**	1	**File ID:**	SC131120001.013
Sample Tag:	01	**Units:**	mg/L		

Analyte	CAS #	Result	Qual	LOQ	LOD
Nitrogen, Ammonia	7664-41-7		U	0.100	0.0500

U	Analyte was not detected. The concentration is below the reported LOD.

Certificate of Analysis

Sample #:	L13110758-01	**PrePrep Method:**	N/A	**Instrument:**	SMARTCHEM
Client ID:	MPL 22-1113-1	**Prep Method:**	353.2	**Prep Date:**	N/A
Matrix:	Water	**Analytical Method:**	353.2	**Cal Date:**	11/18/2013 10:58
Workgroup #:	WG453287	**Analyst:**	BAF	**Run Date:**	11/18/2013 18:25
Collect Date:	11/12/2013 10:00	**Dilution:**	1	**File ID:**	SC13112213215401
Sample Tag:		**Units:**	mg/L		

Analyte	CAS #	Result	Qual	LOQ	LOD
Nitrate-Nitrite (as N)		1.37		0.0500	0.0250

Sample #:	L13110758-01	**PrePrep Method:**	N/A	**Instrument:**	UV-120-1V
Client ID:	MPL 22-1113-1	**Prep Method:**	SM4500-P-E-1999	**Prep Date:**	N/A
Matrix:	Water	**Analytical Method:**	SM4500-P-E-1999	**Cal Date:**	10/30/2013 09:00
Workgroup #:	WG452431	**Analyst:**	DLP	**Run Date:**	11/13/2013 11:40
Collect Date:	11/12/2013 10:00	**Dilution:**	1	**File ID:**	1V.1311131140-14
Sample Tag:		**Units:**	mg/L		

Analyte	CAS #	Result	Qual	LOQ	LOD
Orthophosphate	14265-44-2		U	0.0500	0.0250

U	Analyte was not detected. The concentration is below the reported LOD.

Certificate of Analysis

Sample #:	L13110758-01	**PrePrep Method:**	N/A	**Instrument:**	OVEN
Client ID:	MPL 22-1113-1	**Prep Method:**	160.1/SM2540C	**Prep Date:**	N/A
Matrix:	Water	**Analytical Method:**	SM2540-C-1997	**Cal Date:**	
Workgroup #:	WG453071	**Analyst:**	ADG	**Run Date:**	11/16/2013 08:06
Collect Date:	11/12/2013 10:00	**Dilution:**	1	**File ID:**	EN.1311160806-13
Sample Tag:		**Units:**	mg/L		

Analyte	CAS #	Result	Qual	LOQ	LOD
Total Dissolved Solids		166		20.0	10.0

Sample #:	L13110758-01	**PrePrep Method:**	N/A	**Instrument:**	TOC-VWP
Client ID:	MPL 22-1113-1	**Prep Method:**	415.1	**Prep Date:**	N/A
Matrix:	Water	**Analytical Method:**	415.1	**Cal Date:**	07/09/2013 14:51
Workgroup #:	WG452902	**Analyst:**	BAF	**Run Date:**	11/15/2013 03:35
Collect Date:	11/12/2013 10:00	**Dilution:**	1	**File ID:**	TC11142013.047
Sample Tag:	01	**Units:**	mg/L		

Analyte	CAS #	Result	Qual	LOQ	LOD
Total Organic Carbon	TOC	1.22		1.00	0.500

Sample #:	L13110758-01	**PrePrep Method:**	N/A	**Instrument:**	OVEN
Client ID:	MPL 22-1113-1	**Prep Method:**	160.2/SM2540D	**Prep Date:**	N/A
Matrix:	Water	**Analytical Method:**	SM2540-D-1997	**Cal Date:**	
Workgroup #:	WG452942	**Analyst:**	ADG	**Run Date:**	11/15/2013 09:59
Collect Date:	11/12/2013 10:00	**Dilution:**	1	**File ID:**	EN.1311150959-09
Sample Tag:		**Units:**	mg/L		

Analyte	CAS #	Result	Qual	LOQ	LOD
Total Suspended Solids			U	5.00	2.50

U	Analyte was not detected. The concentration is below the reported LOD.

Certificate of Analysis

Sample #:	L13110758-02	**PrePrep Method:**	N/A	**Instrument:**	ICP-THERMO2
Client ID:	MPL 23-1113-1	**Prep Method:**	3015	**Prep Date:**	11/19/2013 13:35
Matrix:	Water	**Analytical Method:**	6010B	**Cal Date:**	11/21/2013 11:08
Workgroup #:	WG453597	**Analyst:**	QX	**Run Date:**	11/21/2013 14:02
Collect Date:	11/12/2013 12:46	**Dilution:**	1	**File ID:**	T2.112113.140215
Sample Tag:	01	**Units:**	mg/L		

Analyte	CAS #	Result	Qual	LOQ	LOD
Beryllium, Total	7440-41-7		U	0.00200	0.00100
Calcium, Total	7440-70-2	19.7		0.500	0.250
Magnesium, Total	7439-95-4	3.38		0.500	0.250
Potassium, Total	7440-09-7	1.41		1.00	0.500
Sodium, Total	7440-23-5	26.6		0.500	0.250
Tin, Total	7440-31-5		U	0.500	0.250
Vanadium, Total	7440-62-2		U	0.0100	0.00500
Zinc, Total	7440-66-6	0.0170	J	0.0200	0.0100

J	Estimated value ; the analyte concentration was less than the LOQ.
U	Analyte was not detected. The concentration is below the reported LOD.

Certificate of Analysis

Sample #:	L13110758-02	**PrePrep Method:**	N/A	**Instrument:**	ICP-MS2
Client ID:	MPL 23-1113-1	**Prep Method:**	3015	**Prep Date:**	11/15/2013 09:51
Matrix:	Water	**Analytical Method:**	6020	**Cal Date:**	11/21/2013 10:08
Workgroup #:	WG453372	**Analyst:**	JYH	**Run Date:**	11/21/2013 13:38
Collect Date:	11/12/2013 12:46	**Dilution:**	1	**File ID:**	NI.112113.133843
Sample Tag:	02	**Units:**	mg/L		

Analyte	CAS #	Result	Qual	LOQ	LOD
Selenium, Total	7782-49-2	0.00141		0.00100	0.000500

J	Estimated value ; the analyte concentration was less than the LOQ.
U	Analyte was not detected. The concentration is below the reported LOD.

Certificate of Analysis

Sample #:	L13110758-02	**PrePrep Method:**	N/A	**Instrument:**	ICP-MS2
Client ID:	MPL 23-1113-1	**Prep Method:**	3015	**Prep Date:**	11/15/2013 09:51
Matrix:	Water	**Analytical Method:**	6020	**Cal Date:**	11/19/2013 12:44
Workgroup #:	WG453372	**Analyst:**	JYH	**Run Date:**	11/19/2013 14:15
Collect Date:	11/12/2013 12:46	**Dilution:**	1	**File ID:**	NI.111913.141517
Sample Tag:	01	**Units:**	mg/L		

Analyte	CAS #	Result	Qual	LOQ	LOD
Antimony, Total	7440-36-0		U	0.00100	0.000500
Arsenic, Total	7440-38-2	0.000806	J	0.00100	0.000500
Barium, Total	7440-39-3	0.0319		0.00300	0.00150
Cadmium, Total	7440-43-9		U	0.000600	0.000300
Chromium, Total	7440-47-3	0.00174	J	0.00200	0.00100
Cobalt, Total	7440-48-4		U	0.00100	0.000500
Copper, Total	7440-50-8	0.00442		0.00200	0.00100
Lead, Total	7439-92-1	0.00121		0.00100	0.000500
Manganese, Total	7439-96-5	0.00553		0.00200	0.00100
Nickel, Total	7440-02-0		U	0.00400	0.00200
Silver, Total	7440-22-4		U	0.00100	0.000500
Thallium, Total	7440-28-0		U	0.000200	0.000100

J	Estimated value ; the analyte concentration was less than the LOQ.
U	Analyte was not detected. The concentration is below the reported LOD.

Certificate of Analysis

Sample #:	L13110758-02	**PrePrep Method:**	N/A	**Instrument:**	CVAA1
Client ID:	MPL 23-1113-1	**Prep Method:**	7470A	**Prep Date:**	11/14/2013 09:24
Matrix:	Water	**Analytical Method:**	7470A	**Cal Date:**	11/15/2013 11:55
Workgroup #:	WG452995	**Analyst:**	PDM	**Run Date:**	11/15/2013 13:29
Collect Date:	11/12/2013 12:46	**Dilution:**	1	**File ID:**	M7.111513.132916
Sample Tag:	01	**Units:**	mg/L		

Analyte	CAS #	Result	Qual	LOQ	LOD
Mercury	7439-97-6		U	0.000200	0.000100

U	Analyte was not detected. The concentration is below the reported LOD.

Certificate of Analysis

Sample #:	L13110758-02	**PrePrep Method:**	N/A	**Instrument:**	IC1
Client ID:	MPL 23-1113-1	**Prep Method:**	300.0	**Prep Date:**	11/20/2013 14:27
Matrix:	Water	**Analytical Method:**	300.0	**Cal Date:**	11/06/2013 10:26
Workgroup #:	WG453639	**Analyst:**	JBK	**Run Date:**	11/20/2013 19:55
Collect Date:	11/12/2013 12:46	**Dilution:**	1	**File ID:**	I1_112013-22
Sample Tag:	01	**Units:**	mg/L		

Analyte	CAS #	Result	Qual	LOQ	LOD
Chloride	16887-00-6	12.7		0.200	0.100
Fluoride	16984-48-8	0.296		0.200	0.100
Sulfate	14808-79-8	53.6		1.00	0.500

Sample #:	L13110758-02	**PrePrep Method:**	N/A	**Instrument:**	ORION-4STAR
Client ID:	MPL 23-1113-1	**Prep Method:**	9040C	**Prep Date:**	N/A
Matrix:	Water	**Analytical Method:**	9040C	**Cal Date:**	
Workgroup #:	WG452542	**Analyst:**	EPT	**Run Date:**	11/13/2013 17:19
Collect Date:	11/12/2013 12:46	**Dilution:**	1	**File ID:**	OS13111415570001
Sample Tag:		**Units:**	UNITS		

Analyte	CAS #	Result	Qual	LOQ	LOD
Corrosivity pH	10-29-7	7.81		0.000	0.000
Temperature At Determination (C)		19.4		0.000	0.000

Sample #:	L13110758-02	**PrePrep Method:**	N/A	**Instrument:**	SMARTCHEM2
Client ID:	MPL 23-1113-1	**Prep Method:**	310.2	**Prep Date:**	N/A
Matrix:	Water	**Analytical Method:**	310.2	**Cal Date:**	11/18/2013 09:59
Workgroup #:	WG453159	**Analyst:**	BAF	**Run Date:**	11/18/2013 10:06
Collect Date:	11/12/2013 12:46	**Dilution:**	1	**File ID:**	S2131118001.019
Sample Tag:	01	**Units:**	mg/L		

Analyte	CAS #	Result	Qual	LOQ	LOD
Alkalinity, Carbonate (as CaCO3)	13-01-4		U	20.0	10.0

U	Analyte was not detected. The concentration is below the reported LOD.

Certificate of Analysis

Sample #:	L13110758-02	**PrePrep Method:**	N/A	**Instrument:**	SMARTCHEM2
Client ID:	MPL 23-1113-1	**Prep Method:**	310.2	**Prep Date:**	N/A
Matrix:	Water	**Analytical Method:**	310.2	**Cal Date:**	11/18/2013 09:59
Workgroup #:	WG453159	**Analyst:**	BAF	**Run Date:**	11/18/2013 10:06
Collect Date:	11/12/2013 12:46	**Dilution:**	1	**File ID:**	S2131118001.019
Sample Tag:	01	**Units:**	mg/L		

Analyte	CAS #	Result	Qual	LOQ	LOD
Alkalinity, Bicarbonate (as CaCO3)	13-00-3	86.4		20.0	10.0

Sample #:	L13110758-02	**PrePrep Method:**	N/A	**Instrument:**	SMARTCHEM2
Client ID:	MPL 23-1113-1	**Prep Method:**	310.2	**Prep Date:**	N/A
Matrix:	Water	**Analytical Method:**	310.2	**Cal Date:**	11/18/2013 09:59
Workgroup #:	WG453159	**Analyst:**	BAF	**Run Date:**	11/18/2013 10:06
Collect Date:	11/12/2013 12:46	**Dilution:**	1	**File ID:**	S2131118001.019
Sample Tag:	01	**Units:**	mg/L		

Analyte	CAS #	Result	Qual	LOQ	LOD
Alkalinity, Total (as CaCO3)	11-43-8	86.4		20.0	10.0

Sample #:	L13110758-02	**PrePrep Method:**	N/A	**Instrument:**	UV-120-1V
Client ID:	MPL 23-1113-1	**Prep Method:**	SM4500-CN-I	**Prep Date:**	N/A
Matrix:	Water	**Analytical Method:**	SM4500-CN-I	**Cal Date:**	11/21/2013 10:20
Workgroup #:	WG453794	**Analyst:**	DCM	**Run Date:**	11/21/2013 13:10
Collect Date:	11/12/2013 12:46	**Dilution:**	1	**File ID:**	1V.1311211310-07
Sample Tag:	DL01	**Units:**	mg/L		

Analyte	CAS #	Result	Qual	LOQ	LOD
Cyanide, Weak/Dissociable	57-12-5		U	0.0100	0.00500

U	Analyte was not detected. The concentration is below the reported LOD.

Certificate of Analysis

Sample #:	L13110758-02	**PrePrep Method:**	N/A	**Instrument:**	UV-120-1V
Client ID:	MPL 23-1113-1	**Prep Method:**	9014-9010C	**Prep Date:**	N/A
Matrix:	Water	**Analytical Method:**	9014-9010C	**Cal Date:**	11/21/2013 10:20
Workgroup #:	WG453554	**Analyst:**	DCM	**Run Date:**	11/21/2013 11:30
Collect Date:	11/12/2013 12:46	**Dilution:**	1	**File ID:**	1V.1311211130-07
Sample Tag:		**Units:**	mg/L		

Analyte	CAS #	Result	Qual	LOQ	LOD
Cyanide	57-12-5		U	0.0100	0.00500

U	Analyte was not detected. The concentration is below the reported LOD.

Certificate of Analysis

Sample #:	L13110758-02	**PrePrep Method:**	N/A	**Instrument:**	UV-120-1V
Client ID:	MPL 23-1113-1	**Prep Method:**	SM4500-CN-C,G-1999	**Prep Date:**	N/A
Matrix:	Water	**Analytical Method:**	SM4500-CN-C,G-1999	**Cal Date:**	11/21/2013 10:20
Workgroup #:	WG453588	**Analyst:**	DCM	**Run Date:**	11/21/2013 13:30
Collect Date:	11/12/2013 12:46	**Dilution:**	1	**File ID:**	1V.1311211330-06
Sample Tag:	DL02	**Units:**	mg/L		

Analyte	CAS #	Result	Qual	LOQ	LOD
Cyanide, Amenable to Chlor.	57-12-5		U	0.0100	0.00500

U	Analyte was not detected. The concentration is below the reported LOD.

Certificate of Analysis

Sample #:	L13110758-02	**PrePrep Method:**	N/A	**Instrument:**	TIAMO1
Client ID:	MPL 23-1113-1	**Prep Method:**	120.1	**Prep Date:**	N/A
Matrix:	Water	**Analytical Method:**	120.1	**Cal Date:**	
Workgroup #:	WG452659	**Analyst:**	DIH	**Run Date:**	11/13/2013 22:03
Collect Date:	11/12/2013 12:46	**Dilution:**	1	**File ID:**	TI.111313.2203CO
Sample Tag:	01	**Units:**	umhos/cm		

Analyte	CAS #	Result	Qual	LOQ	LOD
Conductivity		322		50.0	10.0

Sample #:	L13110758-02	**PrePrep Method:**	N/A	**Instrument:**	SMARTCHEM
Client ID:	MPL 23-1113-1	**Prep Method:**	350.1	**Prep Date:**	N/A
Matrix:	Water	**Analytical Method:**	350.1	**Cal Date:**	11/20/2013 09:54
Workgroup #:	WG453517	**Analyst:**	BAF	**Run Date:**	11/20/2013 10:01
Collect Date:	11/12/2013 12:46	**Dilution:**	1	**File ID:**	SC131120001.014
Sample Tag:	01	**Units:**	mg/L		

Analyte	CAS #	Result	Qual	LOQ	LOD
Nitrogen, Ammonia	7664-41-7		U	0.100	0.0500

U	Analyte was not detected. The concentration is below the reported LOD.

Certificate of Analysis

Sample #:	L13110758-02	**PrePrep Method:**	N/A	**Instrument:**	SMARTCHEM
Client ID:	MPL 23-1113-1	**Prep Method:**	353.2	**Prep Date:**	N/A
Matrix:	Water	**Analytical Method:**	353.2	**Cal Date:**	11/18/2013 10:58
Workgroup #:	WG453287	**Analyst:**	BAF	**Run Date:**	11/18/2013 18:25
Collect Date:	11/12/2013 12:46	**Dilution:**	1	**File ID:**	SC13112213215801
Sample Tag:		**Units:**	mg/L		

Analyte	CAS #	Result	Qual	LOQ	LOD
Nitrate-Nitrite (as N)		1.61		0.0500	0.0250

Sample #:	L13110758-02	**PrePrep Method:**	N/A	**Instrument:**	UV-120-1V
Client ID:	MPL 23-1113-1	**Prep Method:**	SM4500-P-E-1999	**Prep Date:**	N/A
Matrix:	Water	**Analytical Method:**	SM4500-P-E-1999	**Cal Date:**	10/30/2013 09:00
Workgroup #:	WG452431	**Analyst:**	DLP	**Run Date:**	11/13/2013 11:40
Collect Date:	11/12/2013 12:46	**Dilution:**	1	**File ID:**	1V.1311131140-15
Sample Tag:		**Units:**	mg/L		

Analyte	CAS #	Result	Qual	LOQ	LOD
Orthophosphate	14265-44-2		U	0.0500	0.0250

U	Analyte was not detected. The concentration is below the reported LOD.

Certificate of Analysis

Sample #:	L13110758-02	**PrePrep Method:**	N/A	**Instrument:**	OVEN
Client ID:	MPL 23-1113-1	**Prep Method:**	160.1/SM2540C	**Prep Date:**	N/A
Matrix:	Water	**Analytical Method:**	SM2540-C-1997	**Cal Date:**	
Workgroup #:	WG453071	**Analyst:**	ADG	**Run Date:**	11/16/2013 08:06
Collect Date:	11/12/2013 12:46	**Dilution:**	1	**File ID:**	EN.1311160806-14
Sample Tag:		**Units:**	mg/L		

Analyte	CAS #	Result	Qual	LOQ	LOD
Total Dissolved Solids		148		20.0	10.0

Sample #:	L13110758-02	**PrePrep Method:**	N/A	**Instrument:**	TOC-VWP
Client ID:	MPL 23-1113-1	**Prep Method:**	415.1	**Prep Date:**	N/A
Matrix:	Water	**Analytical Method:**	415.1	**Cal Date:**	07/09/2013 14:51
Workgroup #:	WG452902	**Analyst:**	BAF	**Run Date:**	11/15/2013 03:47
Collect Date:	11/12/2013 12:46	**Dilution:**	1	**File ID:**	TC11142013.048
Sample Tag:	01	**Units:**	mg/L		

Analyte	CAS #	Result	Qual	LOQ	LOD
Total Organic Carbon	TOC	0.700	J	1.00	0.500

J	Estimated value ; the analyte concentration was less than the LOQ.

Certificate of Analysis

Sample #:	L13110758-02	**PrePrep Method:**	N/A	**Instrument:**	OVEN
Client ID:	MPL 23-1113-1	**Prep Method:**	160.2/SM2540D	**Prep Date:**	N/A
Matrix:	Water	**Analytical Method:**	SM2540-D-1997	**Cal Date:**	
Workgroup #:	WG452942	**Analyst:**	ADG	**Run Date:**	11/15/2013 09:59
Collect Date:	11/12/2013 12:46	**Dilution:**	1	**File ID:**	EN.1311150959-10
Sample Tag:		**Units:**	mg/L		

Analyte	CAS #	Result	Qual	LOQ	LOD
Total Suspended Solids			U	5.00	2.50

U	Analyte was not detected. The concentration is below the reported LOD.

Certificate of Analysis

Microbac Laboratories Inc.
Ohio Valley Division Analyst List
November 26, 2013

001 - BIO-CHEM TESTING WVDEP 220	002 - REIC Consultants, Inc. WVDEP 060
003 - Sturm Environmental	004 - MICROBAC PITTSBURGH
ADC - ANTHONY D. CANTER	ADG - APRIL D. GREENE
AJF - AMANDA J. FICKIESEN	AML - TONY M. LONG
AZH - AFTER HOURS	BAF - BRICE A. FENTON
BJO - BRIAN J. OGDEN	BLG - BRENDA L. GREENWALT
BRG - BRENDA R. GREGORY	CAA - CASSIE A. AUGENSTEIN
CAF - CHERYL A. FLOWERS	CEB - CHAD E. BARNES
CLC - CHRYS L. CRAWFORD	CLS - CARA L. STRICKLER
CLW - CHARISSA L. WINTERS	CPD - CHAD P. DAVIS
CRW - CHRISTINA R. WILSON	CSH - CHRIS S. HILL
CTB - CHRIS T. BUCINA	DAK - DEAN A. K
DCM - DAVID C. MERCKLE	DDE - DEBRA D. ELLIOTT
DEV - DAVID E. VANDENBERG	DIH - DEANNA I. HESSON
DLB - DAVID L. BUMGARNER	DLP - DOROTHY L. PAYNE
DLR - DIANNA L. RAUCH	DSM - DAVID S. MOSSOR
ECL - ERIC C. LAWSON	EDL - ERIN D. LONG
ENY - EMILY N. YOAK	EPT - ETHAN P. TIDD
ERP - ERIN R. PORTER	FJB - FRANCES J. BOLDEN
HCB - HEIDI C. BROWN	HJR - HOLLY J. REED
JBK - JEREMY B. KINNEY	JDH - JUSTIN D. HESSON
JKS - JANE K. SCHAAD	JLL - JOHN L. LENT
JWR - JOHN W. RICHARDS	JWS - JACK W. SHEAVES
JYH - JI Y. HU	KDW - KATHRYN D. WELCH
KEB - KATIE E. BARNES	KHR - KIM H. RHODES
KRA - KATHY R. ALBERTSON	KRB - KAELY R. BECKER
KSC - KELLY S. CUNNINGHAM	LKN - LINDA K. NEDEFF
LLS - LARRY L. STEPHENS	LSB - LESLIE S. BUCINA
MBK - MORGAN B. KNOWLTON	MDA - MIKE D. ALBERTSON
MDC - MIKE D. COCHRAN	MES - MARY E. SCHILLING
MLW - MATTHEW L. WARREN	MMB - MAREN M. BEERY
MRT - MICHELLE R. TAYLOR	MSW - MATT S. WILSON
PDM - PIERCE D. MORRIS	PIT - MICROBAC WARRENDALE
PSW - PEGGY S. WEBB	QX - QIN XU
RAH - ROY A. HALSTEAD	REK - BOB E. KYER
RLB - BOB BUCHANAN	RM - RAYMOND MALEKE
RNP - RICK N. PETTY	RS - ROSEMARY SCOTT
RWC - RODNEY W. CAMPBELL	SAV - SARAH A. VANDENBERG
SEP - SUZANNE J. PAUGH	SLM - STEPHANIE L. MOSSBURG
SLP - SHERI L. PFALZGRAF	TMB - TIFFANY M. BAILEY
TMM - TAMMY M. MORRIS	TPA - TYLER P. AMRINE
VC - VICKI COLLIER	WJB - WILL J. BEASLEY
WTD - WADE T. DELONG	XXX - UNAVAILABLE OR SUBCONTRACT

Microbac Laboratories Inc.
List of Valid Qualifiers
November 26, 2013

Qualkey: DOD

Qualifier	Description
*	Surrogate or spike compound out of range
+	Correlation coefficient for the MSA is less than 0.995
<	Result is less than the associated numerical value.
>	Greater than
A	See the report narrative
B	The reported result is associated with a contaminated method blank.
B1	Target analyte detected in method blank at or above the method reporting limit
B3	Target analyte detected in calibration blank at or above the method reporting limit
B4	The BOD unseeded dilution water blank exceeded 0.2 mg/L
C	Confirmed by GC/MS
CG	Confluent growth
CT1	The cooler temperature at receipt exceeded regulatory guidelines for requested testing.
DL	Surrogate or spike compound was diluted out
E	Estimated concentration due to sample matrix interference
EDL	Elevated sample reporting limits, presence of non-target analytes
EMPC	Estimated Maximum Possible Concentration
F, S	Estimated result below quantitation limit; method of standard additions(MSA)
F,CT1	Estimated value; the analyte concentration was less than the RL/LOQ. The cooler temperature at receipt exceeded regula
FL	Free Liquid
H1	Sample analysis performed past holding time.
I	Semiquantitative result (out of instrument calibration range)
J	Estimated concentration; sample matrix interference.
J	Estimated value ; the analyte concentration was greater than the highest standard
J	Estimated value ; the analyte concentration was less than the LOQ.
J	The reported result is an estimated value.
J,B	Analyte detected in both the method blank and sample above the MDL.
J,CT1	Estimated value; the analyte concentration was less than the RL/LOQ.
J,CT1	Estimated value; the analyte concentration was less than the RL/LOQ. The cooler temperature at receipt exceeded regula
J,P	Estimate; columns don't agree to within 40%
J,S	Estimated concentration; analyzed by method of standard addition (MSA)
JB	The reported result is an estimated value. The reported result is also associated with a contaminated method blank.
JQ	The reported result is an estimated value and one or more quality control criteria failed. See narrative.
L	Sample reporting limits elevated due to matrix interference
L1	The associated blank spike (LCS) recovery was above the laboratory acceptance limits.
L2	The associated blank spike (LCS) recovery was below the laboratory acceptance limits.
M	Matrix effect; the concentration is an estimate due to matrix effect.
N	Nontarget analyte; the analyte is a tentativlely identified compound (TIC) by GC/MS
NA	Not applicable
ND	Not detected at or above the reporting limit (RL/MDL).
ND, CT1	Analyte was not detected. The concentration is below the reported LOD. The cooler temperature at receipt exceeded reg
ND, H1	Not detected; Sample analysis performed past holding time.
ND, L	Not detected; sample reporting limit (RL) elevated due to interference
ND, S	Not detected; analyzed by method of standard addition (MSA)
NF	Not found by library search
NFL	No free liquid
NI	Non-ignitable
NR	Analyte is not required to be analyzed
NS	Not spiked
P	Concentrations >40% difference between the two GC columns
Q	One or more quality control criteria failed. See narrative.
QNS	Quantity of sample not sufficient to perform analysis
RA	Reanalysis confirms reported results
RE	Reanalysis confirms sample matrix interference
S	Analyzed by method of standard addition (MSA)
SMI	Sample matrix interference on surrogate
SP	Reported results are for spike compounds only
TIC	Library Search Compound
TNTC	Too numerous to count
U	Analyte was not detected. The concentration is below the reported LOD.
UJ	Undetected; the MDL and RL are estimated due to quality control discrepancies.
UQ	Undetected; the analyte was analyzed for, but not detected.
W	Post-digestion spike for furnace AA out of control limits
X	Exceeds regulatory limit
X, S	Exceeds regulatory limit; method of standard additions (MSA)
Z	Cannot be resolved from isomer - see below

COC No. A 38156

158 Starlite Drive
Marietta, OH 45750

Microbac

CHAIN-OF-CUSTODY RECORD

Phone: 740-373-4071
Fax: 740-373-4835

Company Name: CB & I

Project Contact: Mark Lyon | Contact Phone #: 505-262-8920

Turn Around Requirements: Normal | Location: WSMR STP

Project ID: WSMR STP

Sampler (print): Bradley T. Davis | Signature: Bradley T. Davis

Program: ☐ CWA ☐ RCRA ☐ DOD ☐ AFCEE ☐ Other

Sample I.D. No.	Comp	Grab	Date	Time	Matrix*	NUMBER OF CONTAINERS	Hold	CN-Total	CN-Amenable	CN-Free	Metals-Sb,As,Ba,Be,Cd,	Cr,Co,Cu,Pb,Ni,Se,Ag,Tl	Sn,V,Zn, Hg	chloride, Fluoride, Sulfate	Ammonia-N	Nitrate+Nitrite-N	pH, Spec.Conductivity	TDS, TSS, TOC	Alkalinity	PO4	Na, K, Mg, Mn	TOTAL # (LAB USE)	ADDITIONAL REQUIREMENTS
MPL 22-1113-1		X	11-12-13	1000	W	8		X	X	X	X	X	X	X	X	X	X	X	X	X	X		
MPL 23-1113-1		X	11-12-13	1246	W	8		X	X	X	X	X	X	X	X	X	X	X	X	X	X		

Microbac OVD
Received: 11/13/2013 11:16
By: ROSEMARY SCOTT
221000045202

Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
Bradley T. Davis	11-12-13	1600			
Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time

Remarks:

*Water (W), Soil (S), Solid Waste (SD), Unknown (X)

Page 1 of 1

Microbac Laboratories Inc.

Internal Chain of Custody Report

Login: L13110758
Account: 3005
Project: 3005.011
Samples: 2
Due Date: 22-NOV-2013

Samplenum	Container ID	Products
L13110758-01	277289	300

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	W1	13-NOV-2013 14:04	CLS		
2	ANALYZ	W1	SEM	20-NOV-2013 13:37	JBK	CLS	
3	STORE	SEM	A1	22-NOV-2013 11:20	CLS	JBK	

Samplenum	Container ID	Products
L13110758-01	277290	ALK ALK-B ALK-C

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	W1	13-NOV-2013 14:04	CLS		
2	ANALYZ	W1	WET	14-NOV-2013 09:54	BAF	CLS	
3	STORE	WET	A1	18-NOV-2013 13:19	RS	BAF	

Samplenum	Container ID	Products
L13110758-01	277291	COND COR-PH PO4

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	W1	13-NOV-2013 14:04	CLS		
2	ANALYZ	W1	WET	13-NOV-2013 14:27	EPT	CLS	
3	ANALYZ	WET	A1	13-NOV-2013 17:45	CLS	EPT	

Samplenum	Container ID	Products
L13110758-01	277292	TDS TSS

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	W1	13-NOV-2013 14:04	CLS		
2	ANALYZ	W1	WET	15-NOV-2013 17:15	ADG	AZH	
3	ANALYZ	W1	A1	18-NOV-2013 07:15	AZH	ADG	

A1 - Sample Archive (COLD)
A2 - Sample Archive (AMBIENT)
F1 - Volatiles Freezer in Login
V1 - Volatiles Refrigerator in Login
W1 - Walkin Cooler in Login

Microbac Laboratories Inc.

Internal Chain of Custody Report

Login: L13110758
Account: 3005
Project: 3005.011
Samples: 2
Due Date: 22-NOV-2013

Samplenum	Container ID	Products
L13110758-01	277293	TOC NH3 NO3NO2

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	W1	13-NOV-2013 14:04	CLS		<2
2	ANALYZ	W1	WET	14-NOV-2013 15:44	BAF	RS	
3	STORE	WET	A1	20-NOV-2013 08:14	RLB	DLP	

Samplenum	Container ID	Products
L13110758-01	277294	AG-MS AS-MS BA-MS BE-AX CA CD-MS CO-MS CR-MS (

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	W1	13-NOV-2013 14:04	CLS		
2	PREP	W1	DIG	14-NOV-2013 05:28	REK	AZH	
3	ANALYZ*	DIG	METALS	15-NOV-2013 11:32	PDM	REK	
4	STORE	DIG	A1	19-NOV-2013 14:01	CLS	ERP	

Sample extract/digestate/leachate

Bottle: 2

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	W1	13-NOV-2013 14:04	CLS		

Sample extract/digestate/leachate

Samplenum	Container ID	Products
L13110758-01	277295	CN CN-A CN-WD

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	W1	13-NOV-2013 14:04	CLS		
2	ANALYZ	W1	WET	14-NOV-2013 08:39	DCM	CLS	
3	STORE	WET	A1	22-NOV-2013 15:43	CLS	DCM	

Samplenum	Container ID	Products
L13110758-02	277296	300

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	W1	13-NOV-2013 14:04	CLS		
2	ANALYZ	W1	SEM	20-NOV-2013 13:37	JBK	CLS	
3	STORE	SEM	A1	22-NOV-2013 11:20	CLS	JBK	

A1 - Sample Archive (COLD)
A2 - Sample Archive (AMBIENT)
F1 - Volatiles Freezer in Login
V1 - Volatiles Refrigerator in Login
W1 - Walkin Cooler in Login

Microbac Laboratories Inc.

Internal Chain of Custody Report

Login: L13110758
Account: 3005
Project: 3005.011
Samples: 2
Due Date: 22-NOV-2013

Samplenum	Container ID	Products
L13110758-02	277297	ALK ALK-B ALK-C

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	W1	13-NOV-2013 14:04	CLS		
2	ANALYZ	W1	WET	14-NOV-2013 09:54	BAF	CLS	
3	STORE	WET	A1	18-NOV-2013 13:19	RS	BAF	

Samplenum	Container ID	Products
L13110758-02	277298	COND COR-PH PO4

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	W1	13-NOV-2013 14:04	CLS		
2	ANALYZ	W1	WET	13-NOV-2013 14:27	EPT	CLS	
3	ANALYZ	WET	A1	13-NOV-2013 17:45	CLS	EPT	

Samplenum	Container ID	Products
L13110758-02	277299	TDS TSS

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	W1	13-NOV-2013 14:04	CLS		
2	ANALYZ	W1	WET	15-NOV-2013 17:16	ADG	AZH	
3	ANALYZ	W1	A1	18-NOV-2013 07:15	AZH	ADG	

Samplenum	Container ID	Products
L13110758-02	277300	NH3 NO3NO2 TOC

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	W1	13-NOV-2013 14:04	CLS		<2
2	ANALYZ	W1	WET	14-NOV-2013 15:44	BAF	RS	
3	STORE	WET	A1	20-NOV-2013 08:14	RLB	DLP	

A1 - Sample Archive (COLD)
A2 - Sample Archive (AMBIENT)
F1 - Volatiles Freezer in Login
V1 - Volatiles Refrigerator in Login
W1 - Walkin Cooler in Login

Microbac Laboratories Inc.

Internal Chain of Custody Report

Login: L13110758
Account: 3005
Project: 3005.011
Samples: 2
Due Date: 22-NOV-2013

Samplenum	Container ID	Products
L13110758-02	277301	AG-MS AS-MS BA-MS BE-AX CA CD-MS CO-MS CR-MS (

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	W1	13-NOV-2013 14:04	CLS		
2	PREP	W1	DIG	14-NOV-2013 05:28	REK	AZH	
3	ANALYZ*	DIG	METALS	15-NOV-2013 11:32	PDM	REK	
4	STORE	DIG	A1	19-NOV-2013 14:01	CLS	ERP	

***Sample extract/digestate/leachate**

Bottle: 2

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	W1	13-NOV-2013 14:04	CLS		

***Sample extract/digestate/leachate**

Samplenum	Container ID	Products
L13110758-02	277302	CN CN-A CN-WD

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	W1	13-NOV-2013 14:04	CLS		
2	ANALYZ	W1	WET	14-NOV-2013 08:39	DCM	CLS	
3	STORE	WET	A1	22-NOV-2013 15:43	CLS	DCM	

A1 - Sample Archive (COLD)
A2 - Sample Archive (AMBIENT)
F1 - Volatiles Freezer in Login
V1 - Volatiles Refrigerator in Login
W1 - Walkin Cooler in Login